

Title: Desertification

Subject: Subject (SNC2D)

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WHAT IS DESERTIFICATION

Desertification is the persistent **degradation** of **dry-land ecosystems** by variations in climate and human activities. Home to a third of the human population in 2000, **drylands** occupy nearly half of Earth's land area. Across the world, desertification affects the livelihoods of millions of people who rely on the benefits that dryland ecosystems can provide.

Desertification occurs as a result of a long-term failure to balance human demand for **ecosystem services** and the amount the ecosystem can supply. The pressure is increasing on **dryland ecosystems** for providing **services** such as food, forage, fuel, building materials, and water which is needed for humans, livestock, irrigation, and sanitation. This increase is attributed to a combination of human factors (such as population pressure and **land use patterns**) and climatic factors (such as droughts). While the global and regional interplay of these factors is complex, it is possible to understand it at the local scale.

Some **10–20%** of **drylands** are already **degraded** (medium certainty). Based on these rough estimates, about **1–6%** of the dryland people live in decertified areas, while a much larger number is under threat from further **desertification**. Scenarios of future development show that, if unchecked, desertification and degradation of ecosystem services in drylands will threaten future improvements in human **well-being** and possibly reverse gains in some regions. Therefore, desertification ranks among the greatest environmental challenges today and is a major impediment to meeting basic human needs in drylands.

WHAT CAUSES DESERTIFICATION

Desertification occurs when: The tree and plant cover that binds the soil is removed. It occurs when trees and bushes are stripped away for fuelwood and timber, or to clear land for cultivation.

animals eat away grasses and erode topsoil with their hooves.

intensive farming depletes the nutrients in the soil.

Wind and water erosion aggravate the damage, carrying away topsoil and leaving behind a highly infertile mix of dust and sand. It is the combination of these factors that transforms degraded land into desert.

IMPACT ON DESERTIFICATION

Desertification is a global issue, with serious implications worldwide for biodiversity, eco-safety, poverty eradication, socio-economic stability and sustainable development.

Drylands are already fragile. As they become degraded, the impact on people, livestock and environment can be devastating. Some 50 million people may be displaced within the next 10 years as a result of desertification.

The issue of desertification is not new though — it played a significant role in human history, contributing to the collapse of several large empires, and the displacement of local populations. But today, the pace of arable land degradation is estimated at 30 to 35 times the historical rate.

TOWARDS SUSTAINABLE DEVELOPMENT

What can be done?

- Reforestation and tree regeneration
- Water management — saving, reuse of treated water, rainwater harvesting, desalination, or direct use of seawater for salt-loving plants
- Fixating the soil through the use of sand fences, shelter belts, woodlots and windbreaks

- Enrichment and hyper-fertilizing of soil through planting
- Farmer Managed Natural Regeneration (FMNR), enabling native sprouting tree growth through selective pruning of shrub shoots. The residue from pruned trees can be used to provide mulching for fields thus increasing soil water retention and reducing evaporation.

WHAT ARE THE EFFECTS OF DESERTIFICATION?

Desertification reduces the ability of land to support life, affecting wild species, domestic animals, agricultural crops and people. The reduction in plant cover that accompanies desertification leads to accelerated soil erosion by wind and water. South Africa losing approximately 300-400 million tonnes of topsoil every year. As vegetation cover and soil layer are reduced, rain drop impact and run-off increases.

Water is lost off the land instead of soaking into the soil to provide moisture for plants. Even long-lived plants that would normally survive droughts die. A reduction in plant cover also results in a reduction in the quantity of humus and plant nutrients in the soil, and plant production drops further. As protective plant cover disappears, floods become more frequent and more severe. Desertification is self-reinforcing, i.e. once the process has started, conditions are set for continual deterioration.

HOW WOULD DIFFERENT DEVELOPMENT PATHS INFLUENCE DESERTIFICATION IN THE FUTURE ?

Population growth and increased food demand are expected to drive the expansion and intensification of land cultivation in drylands. If no countermeasures are taken, desertification in drylands will threaten future improvements in human well-being and possibly reverse gains in some regions.

The Millennium Ecosystem Assessment developed four plausible scenarios to explore the future of desertification and human well-being until 2050 and beyond. The different scenarios are based on either

increased globalization or increased regionalization, each combined with either a reactive or proactive way of addressing environmental issues.

In all four scenarios, the decertified area is expected to increase, though not at the same pace. Poverty and unsustainable land use practices will continue to be the main factors driving desertification in the near future, and climate change will also play a role.

Local adaptation and conservation practices can mitigate some losses of dryland services, but it will be difficult to reverse losses in terms of biodiversity and in the provision of food and water which is linked to biodiversity. Freshwater scarcity, which already affects 1-2 billion people globally, is expected to increase, causing greater stresses in drylands and ultimately a worsening of desertification.

The implementation of the U.N. Convention to Combat Desertification (UNCCD) would be particularly difficult in a regionalized-reactive world (Order from strength scenario), while prospects would improve in a more globalized world with proactive ecosystem management.